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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
PIGGUSH, AARON C	
ART UNIT	**PAPER NUMBER**
2838	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/752,977	HARRISON, CHRIS	
	Examiner	Art Unit	
	Aaron Piggush	2838	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 February 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9,11-23,25-37,39-48 and 52-54* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9, 11-23, 25-37, 39-48, and 52-54* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. In view of the Appeal Brief filed on February 8, 2008, PROSECUTION IS HEREBY REOPENED. To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (Akm Ullah) has approved of reopening prosecution.

/Akm Enayet Ullah/

Supervisory Patent Examiner, Art Unit 2838

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 3, 6-9, 11-13, 15, 17, 20-23, 25-27, 29, 31, 34-37, 39-41, 43-48, and 52-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Notten (US 6,016,047) in view of Sakakibara (US 6,433,517).

With respect to claims 1, 15, and 29, Notten discloses a battery charger, a process, and a storage medium configured to provide temperature-regulated charging of a battery, comprising:

a processing arrangement, steps, and a software arrangement (col 9 ln 1-27 and col 2 ln 35-45) operable to:

(a) obtain a temperature data associated with the battery (col 8 ln 5-35); and

(b) apply a particular amount of a charge to the battery, based on the temperature data of the battery wherein the processing arrangement is configured to maintain the battery at a predetermined threshold temperature during at least a majority of an entire time period in which the charge is applied to the battery (col 26 ln 5-35 and Fig. 10a).

To clarify, Fig. 10a shows that from 0 to 600 mAh (out of a possible 0 to 1000 mAh if you include the overcharging section), the temperature is maintained at the same level/threshold, even at varying current levels. "An entire time period" in which the charge is applied could be interpreted as any length of time during the overall time that the charge is applied. The terms "the entire time period" would encompass the actual entirety of the charging process, but if that was the intention of the amendment presented, then it would not follow the applicant's own disclosure (see Fig. 2 wherein the beginning of the time period is clearly not at the same temperature level, and also see para 0024 of applicant's specification). Lastly, and as previously mentioned, the charging at 0.1 A of the Notten reference appears to be at approximately the same temperature level throughout the entirety of the charging (Fig .10a).

However, Notten does not expressly disclose wherein the charging initially applied to the battery is 6.5A or greater. Although it should be noted that Notten does not place limitations in

his charging current (the current in the figures are example/simulation currents), and the use of his device with various types of batteries (including NiCd, NiMH, and Li-ion col 10 ln 50-55) and devices (including shavers, vacuum cleaners, screw drivers, and computers col 1 ln 37-43) only adds to the range of potential charging currents that would be reasonably applicable with Notten.

Sakakibara discloses a battery charger and charging method wherein the detected temperature helps control the charging current applied (abstract) and wherein the initial charging current applied is 6.5A or greater (discloses 9A from 4.5C in col 8 ln 5-10 and col 6 ln 45-46, as well as in Fig. 6, please note that although the figure lists the charging current in coulombs, the specification clearly states that it is at 9 amperes), in order to allow the battery to be charged more quickly when it is in appropriate temperature ranges.

Notten and Sakakibara are analogous art because they both deal with battery chargers and methods wherein the temperature helps control the charging current applied. They also both mention use of the respective devices with NiMH batteries and power tools, amongst other things (see Notten col 10 ln 50-55 and col 1 ln 37-43 and Sakakibara col 1 ln 20-52).

It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. It has also been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Finding an optimum initial charging current for acceptable temperature rise would not require undue experimentation, especially when the Sakakibara reference is used in combination with Notten.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use an initial charge of 6.5A or greater in the device of Notten, as did Sakakibara, so that the battery could be charged more fully and quickly by warming/heating the battery with a larger charging current initially (helps the battery reach an optimum level of charging more quickly).

With respect to claims 3, 17, and 31, Notten discloses wherein the charge is applied to the battery until charging of the battery is substantially completed (col 26 ln 10-35 and Fig. 8a). Furthermore, the charging of the battery can be considered to be substantially completed much later than just when the battery reaches its peak voltage level.

With respect to claims 6, 20, and 34, Notten discloses the charger, process, and storage medium further comprising at least one temperature sensor mounted on or in the battery, wherein the temperature sensor measures the temperature of the battery (no. 126 in Fig. 1 and 2 and col 26 ln 5-35).

With respect to claims 7, 21, and 35, Notten discloses the charger, process, and storage medium further comprising at least one temperature sensor, wherein the temperature sensor measures an ambient temperature (col 26 ln 5-35).

With respect to claims 8, 22, and 36, Notten discloses wherein the charge applied to the battery allows a maximum charge intensity during charging of the battery as a function of the temperature data without damaging the battery (col 26 ln 5-35). Additionally, it is implied that temperature (or voltage control) of battery charging is used in order to provide protection to the battery (i.e. prevent damage)

With respect to claims 9, 23, and 37, Notten discloses wherein the processing arrangement regulates the particular amount of the charge supplied to the battery as a function of the temperature data (col 26 ln 5-35).

With respect to claims 11, 25, and 39, Notten discloses wherein the charge applied to the battery is based on one of voltage measurements and temperature measurements of the battery (col 26 ln 5-35).

With respect to claims 12, 26, and 40, Notten discloses wherein the amount of the charge provided to the battery is capable of being increased based on a change in the temperature data of the battery (col 26 ln 5-35). Additionally, it is well known that a battery cell at a higher temperature can receive a charge at a higher rate (while avoiding damage) than a cell at a lower temperature. Therefore, it is safe and capable of receiving a higher amount of charge when it is at a higher temperature (up to a certain point or threshold, wherein after that point, damage can occur).

With respect to claims 13, 27, and 41, Notten discloses wherein the battery comprises at least one of a nickel metal hydride battery, a nickel cadmium battery, a lead acid battery, or a lithium ion battery (col 10 ln 50-55 and col 7 ln 18-46).

With respect to claims 43-45, Notten discloses wherein the time period is the period from a start of the charge applied to the battery and ends approximately when a peak charge of the battery has occurred (col 26 ln 5-35 and Fig. 4, 8a, and 10a). Furthermore, it should be noted that the claim language does not specifically state that the temperature cannot be maintained after the time period has ended, just that it needs to be maintained during that time period.

With respect to claims 46-48, Notten discloses wherein the charge applied to the battery is a non-trickle charge (see Fig. 8a and 10a and col 26 ln 5-35). Furthermore, Notten never mentions a trickle charge, and the charging at 0.1A is not necessarily a trickle charge (it would depend on the actual capacity of the battery being charged). Please also refer to the rejection of claims 1, 15, and 29.

With respect to claims 52-54, Notten discloses wherein the processing arrangement regulates the particular amount of the charge to be at least one of gradually increased or gradually reduced during the time period (Fig. 8a and 10a and col 26 ln 50-64).

The gradual increase of the charge being applied to the current can be seen in Fig. 8a and 10a and col 26 ln 50-64. Those figures show a voltage/temperature vs. charge behavior of a battery as a function of the current. Furthermore, the term "gradual" is a term of degree and is not in reference to anything else (i.e. gradual with respect to what). Notten is still seen as meeting the claim language presented for the reasons mentioned above.

4. Claims 2, 4, 14, 16, 18, 28, 30, 32, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Notten (US 6,016,047) and Sakakibara (US 6,433,517), further in view of Farley (US 5,767,659).

With respect to claims 2, 16, and 30, Notten discloses the charger, process, and storage medium further operable to:

(c) obtain a voltage data associated with the battery (col 7 ln 59-63), however, does not expressly disclose applying a charge to the battery, the charge being determined based on the voltage data of the battery.

Farley discloses applying a charge to a battery, the charge being determined based on the voltage data of the battery (col 13 ln 33-36 and ln 58-61), in order to accurately apply charge to the battery while avoiding damage from overcharging.

At the time of invention, it would have been obvious to a person of ordinary skill in the art to apply a charge to the battery being determined based on the voltage data of the battery in the device of Notten, as did Farley, so that the battery would have additional protection from damage due to overcharging the battery.

With respect to claims 4, 18, and 32, Notten does not expressly disclose wherein the charger, process, and storage medium are further operable to reading a voltage of the battery to determine if charging of battery is substantially complete.

Farley discloses reading a voltage of the battery to determine if charging of the battery is substantially complete (col 14 ln 48-62 and col 13 ln 32-36 and ln 58-62), in order to prevent damage to the battery from overcharging, which in turn would also prevent the waste of electricity.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to determine if the charging of the battery is substantially complete by reading a voltage of the battery, so that charging could be stopped when it was finished which would prevent damage/wear to the battery and prevent the waste of electricity.

With respect to claims 14, 28, and 42, Notten does not expressly disclose the charger, process, and storage medium further operable to cool the battery using a cooling arrangement. Although, it is known that the reduction of the current input to the battery lowers the temperature created by that large current, which is also noted below with the Farley reference.

Farley discloses cooling of a battery using a cooling arrangement (col 3 ln 26-33 and col 8 ln 54-58), in order to avoid damaging the battery by charging at dangerously high temperatures. Furthermore, the reduction of the current input to the battery lowers the temperature created by that large current.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include a cooling arrangement in the device of Notten, as did Farley, so that overheating the battery could be avoided, which in turn would help prevent damage from occurring to the battery due to extremely high temperatures. A narrower interpretation of claims 14, 28, and 42 is addressed and alternatively rejected under 35 U.S.C. 103, as seen below.

5. Claims 5, 19, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Notten (US 6,016,047), Sakakibara (US 6,433,517), and Farley (US 5,767,659) as applied to the claims above, and further in view of Podrazhansky (US 5,889,385).

With respect to claims 5, 19, and 33, Notten discloses measuring a first voltage of the battery (col 7 ln 59-63), however, does not expressly disclose the remaining portions of the claim.

Farley discloses wherein a charger, process, and storage medium are further operable to:

(c) measure a first voltage across a terminal of the battery (first box labeled "read battery voltage store" in Fig. 8a);

(d) measure a second voltage across the terminals of the battery after step (c) (second box labeled "read battery voltage store" in Fig. 8a);

(e) determine a difference between the first voltage and the second voltage (no. 81 in Fig. 8a and col 9 ln 36-40);

However, Farley does not expressly disclose step (f) wherein procedures (c)-(e) are repeated until charging of the battery is substantially complete.

Podrazhansky discloses measuring first and second voltages of a battery (no. 305 in Fig. 3A), determining a difference between the first and second voltages (no. 305 in Fig. 3A), and repeating those steps until charging of the battery is substantially complete (no. 310 in Fig. 3A, no. 325 in Fig. 3B, pathways A, B, and C in Fig. 3A and 3B, and col 15 ln 15-29), in order to fully charge the battery while avoiding an overcharge, which would result in damage to the battery.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include a repetition of the above mentioned steps in the charger, process, and storage medium of Notten, as did Farley and Podrazhansky, until the charging of the battery is substantially complete, so that the battery could be fully charged more efficiently without being overcharged and damaged.

6. Claims 14, 28, and 42 are alternatively rejected under 35 U.S.C. 103(a) as being unpatentable over Notten (US 6,016,047) and Sakakibara (US 6,433,517), further in view of Yagi (US 6,188,202).

With respect to claims 14, 28, and 42, an alternative and more narrow interpretation of these claims is addressed wherein the cooling arrangement is a device or means other than reducing the current input to the battery.

Yagi discloses a cooling fan used to reduce the temperature of the battery under charge (no. 16 in Fig. 1 and col 2 ln 60-61 and col 3 ln 20-25), in order to avoid damage to the battery from an extremely high temperature.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include a fan as the cooling arrangement in the charger, process, and storage medium of Notten, as did Yagi, so that damage from an extremely high temperature could be avoided.

Response to Arguments

7. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection. Please note the inclusion of the Sakakibara reference above, along with additional explanations included in the rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron Piggush whose telephone number is (571)272-5978. The examiner can normally be reached on Monday-Friday 9:30am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Akm Ullah can be reached on 571-272-2361. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Akm Enayet Ullah/
Supervisory Patent Examiner, Art Unit 2838

/A. P./
Examiner, Art Unit 2838